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ABSTRACT

Data-based studies comparing effectiveness of middle schools to traditional or other schools are almost nonexistent. The middle school movement may have gained acceptance as a reaction to the failures of junior high schools and as a response to improved understanding of the nature of the learner. The state of Pennsylvania bases the organization of its middle schools on the nature of the learner in an attempt to accommodate the needs of the adolescent. Although differences in organizational structure and teacher certification exist, middle schools and junior high schools are alike in many respects. This study tests whether middle school students score higher on self-esteem and cognitive skills (reading) than do students in traditional secondary schools. The Educational Quality Assessment data from the Pennsylvania Department of Education provided test scores on eighth-grade students in middle and junior high schools as the data source for this study. No significant differences were found between the middle school and junior high school students on self-esteem or reading comprehension. (MD)

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MIDDLE SCHOOLS: DO THEY MAKE A DIFFERENCE?

The following article was written by Roger L. Miller, a former middle school and elementary principal, who is presently serving as assistant to the superintendent in the Littlestown Area School District in Littlestown, Pennsylvania.

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MIDDLE SCHOOLS: DO THEY MAKE A DIFFERENCE?

Middle schools in Pennsylvania have grown in number and popularity since the first was given approval by the Pennsylvania Department of Education in 1959. Today, there are over 200 middle schools throughout the 501 school districts in Pennsylvania.

Middle schools within Pennsylvania differ from traditional schools in several basic ways. First, they have an organizational structure which encompasses youngsters in the 10-14 age bracket and have either a grade five through eight or six through eight structure. The middle schools have at least three grades and may not include grade nine in the structure. Second, the philosophical base for the middle school is centered on the child rather than on the program as in the traditional junior high school. Thus, the school program in the middle school is a means to an end rather than the end itself.

Common within middle school philosophy is the implication that, as a result of having a child-centered school, the youngsters will have a more adequate "self-esteem". In addition, the positive self-esteem is contributed to by academic success which is also enhanced by the special nature of the program. Thus, two hypotheses can be formed. First, middle school students will score significantly higher on a test of self-esteem than students in traditional secondary schools. Secondly, students in middle schools will score significantly higher on a test of cognitive skill - reading - than students in traditional secondary schools.

The national trend to middle schools is a relatively new one. Alexander (1967) conducted a nationwide survey which determined that there were 1101 middle schools nationwide. At that time 25 were in operation in Pennsylvania. Brooks (1977) conducted a similar survey which determined that the number of middle schools nationwide had grown to 4,060. In 1977 Pennsylvania had 175 middle schools in operation.

Data based studies regarding the effectiveness of middle schools in comparison to traditional or other school structures are almost non-existent. McGee and Krajewski (1977) completed a three-year study of one middle school that had been converted from a traditional junior high school. From the survey data collected, they formed two hypotheses: student attitudes will be equal to or more favorable than student attitudes in a junior high school; middle school student achievement scores will be equal to or better than student achievement scores in a junior high school. In another study, Glissmeyer (1971) studied 356 sixth grade students from elementary and middle schools and compared their achievement test scores. He found that there was no significant differences in the scores of sixth graders from elementary schools and those from middle schools. He suggested other factors should be tested besides achievement.

It appears that the middle school movement was conceived and gained acceptance without having data based research to confirm the factors proported for middle schools. One reason for the widespread acceptance may have been a reaction to the failures of the junior high school. Moss (1969) summarized the negative feeling of many educators:

1. The junior high school failed to achieve its purpose.

2. The junior high school developed into a cheap imitation of the senior high school.

3. The 9th grade remained college preparatory-oriented.

4. In large cities the junior high unwittingly fostered racial imbalance.

Another reason for the growth of middle schools may have to do with the nature of the learner. The middle school age youngsters have been characterized as having rapid physical change and emotional variability. The rigid organization of the junior high school did not permit enough flexibility to plan an educational program suitable for the rapidly changing youngsters.

It is the nature of the learner that forms the basis for the organization of middle schools in Pennsylvania. In Guidelines for Middle Schools (1982) it is suggested that the goals of a middle school should be designed to accommodate the needs of the adolescent. Program organization should have provisions for student involvement. Instructional approaches - teaming, core, or unified studies - or any combination of the three should be implemented according to the needs of the learner. Each middle school should have three basic programs - academic studies, guidance, and student activities - and each of these should reflect Pennsylvania's Goals of Quality Education which are recommended for all public schools in the state. In order to gain approval for middle school status in Pennsylvania, a school or district should demonstrate evidence that the guidelines as listed above have been met.

The guidelines for establishing and maintaining a middle school are very different from those for a junior high school. The Pennsylvania

School Regulations (Chapter 5) clearly specifies the curriculum requirements for junior high schools. A program of studies has been established which lists the subjects and course offerings which must be initiated during the three-year period in the junior high school. The junior high program is rigid, especially at the ninth grade level, while the middle school can be flexible. In addition, an approved middle school is exempted from the state curriculum regulations.

Due to the locally designed nature of middle schools, a statewide evaluation instrument which would be applicable for all middle schools has not been developed. Thus, middle schools have the latitude to evaluate themselves using any desired formula. A progress report must be filed with the Department of Education each year in order to maintain operation. Some schools submit achievement test results while others submit narratives regarding accomplishments made during the year.

The certification and assignment of teachers to middle and junior high schools should be delineated. Pennsylvania does not certify teachers specifically for the middle school levels. Elementary teachers are certified through grade six. However, if the teacher is assigned to a middle school, the limitation is extended through grade eight. Secondary teachers are certified from grade seven through twelve and may not teach below grade seven unless the assignment is in the teacher's area of certification. Since the junior high school is considered to be a secondary school, junior high schools are staffed with subject specialists while middle schools may have any combination of elementary and secondary certified teachers.

Although differences in organizational structure and teacher certification exist, middle schools and junior high schools are in agreement in many respects. For example, both school patterns encompass eighth grade students. The eighth grade students provide a means of contrasting and comparison between the two types of school structures.

The Pennsylvania Department of Education has tested students in schools across the state for over ten years. Through the use of Educational Quality Assessment (EQA) instruments, the Department has provided school districts and individual schools with valuable information regarding many factors of school progress and operation. Students in participating schools are tested in grades five, eight, and eleven on a rotating schedule. One of the objectives of the testing program is to provide information regarding the Goals of Quality Education suggested by the state. Two of the Goals are especially important since they serve as the basis of data for this study. First, quality education should help every student develop self-understanding and a feeling of self-worth (self-esteem). Secondly, quality education should help every student acquire communication skills of understanding, speaking, reading, and writing. Thus, the EQA data gained from eighth grade students in middle and junior high schools forms the data source for testing the hypotheses presented at the beginning of this study.

Students responding to the area of self-esteem were asked to relate their feelings of success and feelings of acceptance primarily in the school setting. Four separate forms were made available with eight questions on each. Sample items included statements such as

"I feel that my teachers understand me" and "I am able to do many things well in school". Choices were made on a four point scale from strongly agree to strongly disagree.

The eighth graders were also tested for reading comprehension. The areas included on the test were literal and inferential comprehension and word meaning in a given context. There were four forms of the test utilized which contained twelve questions. The students were to make a choice from four multiple choice options.

The state tested eighth graders in 231 schools in 1982. For the purpose of this study, however, only middle schools with the 5-8 or 6-8 structure were used. Further, only junior high schools with a 7-9 structure were listed. As a result, 90 middle schools and 57 junior high schools representing 30,232 students formed the data base.

As part of the data collected by the state the students responded regarding the types of communities in which they were living. The scale used was from 0 = In the open country or in a farming community to 7 = In Philadelphia or Pittsburgh. The scale was reduced further for reporting purposes to render ranges which represented population areas. Thus, 0 to 1.5 = rural, 1.51 to 4.50 = suburban, and 4.51 to 7.00 = urban. Based upon the above scale the 147 schools were in the following areas:

<u>Grades</u>	<u>Rural</u>	<u>Suburban</u>	<u>Urban</u>	<u>Total</u>
5-8	15	8	2	25
6-8	27	19	19	65
7-9	<u>23</u> 65	<u>23</u> 50	<u>11</u> 32	<u>57</u> 147

Other data collected for the purpose of this study included students' interests in school, creative activities, and perceptions of the expectations of the teachers. Grade enrollment, tuition, teacher education, teacher experience, class size and parents' educational levels were other factors collected and considered.

All of the data was collected on computer tape in Harrisburg, and the tape was placed into the main-frame computer at the University of Maryland. The statistical process utilized to process the data was the Statistical Package for the Social Sciences (SPSS). Frequencies were obtained for each variable for later use. The process arranged each set of variable data in rank order from high to low. In addition to printing the mean, mode, standard error, and other statistical information the frequencies provided necessary middle points in the data which was necessary to carry out the next step - crosstabulation.

Utilizing information from the frequencies, a crosstab was obtained which compared the structure of the middle schools and the junior high schools regarding self-esteem. The self-esteem scores were divided into two parts (high and low).

	<u>Middle Schools</u>	<u>Secondary Schools</u>
Low-Esteem	42	31
	46.7%	54.4%
High-Esteem	48	26
	53.3%	45.6%

The crosstab procedure was used to determine if there was a relationship between the structure of the schools and self-esteem.

All middle schools were combined in this procedure. The crosstab shows that there were 53.3% of middle schools in the high esteem category. Junior high schools had 45.6% of the schools in the high esteem quadrant. The difference between the two indicates that there is a .077 significance between the two school structures. Therefore, according to the data there is not a significant difference between middle schools and junior high schools when self-esteem is applied to the structure.

The crosstabulation procedure was also used to determine if any significant relationship existed between the school structure and reading comprehension.

	<u>Middle Schools</u>	<u>Secondary Schools</u>
Low Reading	38	35
	42.2%	61.4%
High Reading	52	22
	57.8%	38.6%

The crosstab shows that there were 57.8% of the middle schools in the high reading category. Junior high schools had 38.6% of the schools in the high reading quadrant. The difference between the two indicates that there is a .192 significance between the two structures when reading comprehension is applied. This is a very weak relationship.

Crosstabulation of the school scores from the frequency distributions for reading and self-esteem is a quick and "dirty" method of determining if the tabulated results may be significant. However, without further analysis of the school scores only a general interpretation

can be made regarding significance. Further, the possible problem of urbanicity, previously listed in table form, could mask the tabulated results. Thus, a series of "t" tests were performed on each set of data - rural, suburban, and urban and for the combined totals to determine the statistical significance of the respective sets of data. The formula utilized for the "t" testing was as follows:

$$t = \frac{|\bar{X}_1 - \bar{X}_2 - K|}{\sqrt{\left(\frac{\sum X_1^2 + \sum X_2^2}{N_1 + N_2 - 2}\right)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

The sum of squares $\sum X^2$ in the formula was obtained by the formula:

$$\sum X^2 = \frac{1}{N} [N \sum X^2 - (\sum X)^2]$$

The "t" test results are as follows:

<u>Middle Schools v. Secondary Schools</u>		<u>Goal Area - Self-Esteem</u>	
Rural 1.27	Suburban .148	Urban 1.10	Combined 1.28
<u>Middle Schools v. Secondary Schools</u>		<u>Goal Area - Reading Comprehension</u>	
Rural .638	Suburban .185	Urban N/A	Combined .422

Through the use of the cross tabulation procedure and "t" testing of the respective school scores neither of the hypotheses - middle school students will score significantly higher on a test of self-esteem and will also score significantly higher on a test of cognitive skill in reading - has been proven.

The possibility of an error in measurement is possible but not likely. The original instruments used to gather the data are very reliable according to EQA authorities. The relatively small number of cases examined (147) represent over 30,000 responses regarding self-esteem and reading comprehension. The possibility of a suppressor variable existing is very possible. Principals could have held out their best or worst students from the testing in order to skew the

school scores. Perhaps the model was poorly conceived and a better conceptual framework could have been utilized. Finally, the theory could be in error. Perhaps middle schools do not do what they said they could or should do. There is the possibility that middle schools do not practice the principles for which they were approved. Other than the yearly self-evaluation by the schools, the state has no mechanism set up to check on the middle school operation. Another possibility is that the principles upon which the middle schools were approved were almost entirely affective in nature and very difficult to measure statistically. It could be that the junior high schools may have reacted to the middle school movement and incorporated some features of middle schools into their operation which would have a negating effect on the middle school scores. Whatever the reasons, the data does not support the contention that middle school students will score significantly higher on tests of self-esteem and reading comprehension than students in traditional junior high schools.

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